

Staudinger and Rebel's Catalogue.*

At last the long-awaited "new edition" of this Catalogue has appeared, and the stagnation of the last 30 years (as regards the bulk of the continental European work in matters of classification and nomenclature) is doomed to be rudely disturbed. At the close of his preface Dr. Rebel is modestly content to claim that the new Catalogue, as compared with that of 1871, may be regarded as "ein Schritt nach Vorwärts," and he certainly would be one of the last to wish to have it treated as a "ne plus ultra," although it is to be feared that, when once it has found acceptance in the entomological world, all corrections will be ignored except by the comparative few—just as has been the case with its precursors. Be this as it may, we hail the present edition with profound satisfaction; in how many ways it is an enormous step in advance the following review will, it is hoped, sufficiently show.

In the matter of classification the system laid before us in the present work cannot be regarded as more than a *via media*. Dr. Rebel, in his preface, more than hints at the great difficulties which he and his late colleague encountered in arriving at any understanding at all on the subject—difficulties which at times threatened to wreck the whole undertaking; and, as Dr. Rebel had to make many concessions, and even sacrifices, to the greater conservatism of Dr. Staudinger, it need occasion no surprise that there still remains much room for progress in the classification from a biological standpoint. Let us hope that so long a period as 30 years will not elapse between the appearance of this catalogue and the next, and that Dr. Rebel will be spared himself to participate in a further revision and rearrangement. On p. xxxii there is a convenient "Uebersicht der Familienreihenfolge," which facilitates comparison of the present system both with that of the 1871 edition and also with Dr. Rebel's scheme published two years ago.† The first thing that strikes one is that, notwithstanding the decidedly-expressed opinion of the last-named, the domination of the old and inaccurate conceptions of "Macrolepidoptera" and "Microlepidoptera" is not yet brought to an end; for, although the terms are avoided, yet the contents of Theil I and Theil II respectively show the influence of those conceptions, and the result is that the sequence of families is less natural than that proposed in vol. xi of the *Iris*. This, however, was the almost inevitable result of the division of the work between the two collaborators, Dr. Staudinger wishing to retain control of all those families which formed his share of the 1871 catalogue—including such primitive forms as the *Hepialidae* (Theil I, Fam. 39). But its most regrettable result, perhaps, is the almost pole-wide severance of the two recognised Psychid families—the *Psychidae*, in Theil I, and the *Taleporiidae*, in Theil II. Dr. Chapman's recently-renewed protests (*antè*, p. 180) are not uncalled-

* "Catalog der Lepidopteren des palaearctischen Faunengebietes," von Dr. Phil. O. Staudinger und Dr. Phil. H. Rebel. Dritte Auflage des "Cataloges des europäischen Faunengebietes." Berlin: R. Friedländer und Sohn. Mai, 1901. I. Theil: Fam. *Papilionidae*-*Hepialidae*, von Dr. O. Staudinger und Dr. H. Rebel; II. Theil: Fam. *Pyralidae*-*Micropterygidae*, von Dr. H. Rebel. xxxii + 411 + 368 pp. in Svo.

† "Ueber die gegenwärtigen Stand der Lepidopteren-Systematik" (*Iris*, xi., pp. 377-391, February, 1899.)

for, yet it is satisfactory to know that Dr. Rebel himself holds the sounder view. The preface (p. x) also expressly tells us that the retention of *Thyrididae*, and all families from *Heterogynidae*, in Theil I, was a concession to the special desire of Dr. Staudinger. Another important difference of arrangement between the new *Catalog* and the scheme in *Iris* is that the latter follows the ascending scale, beginning with the *Eriocephalidae* (now correctly called *Micropterygidae*), whereas the former starts with *Papilionidae* and (roughly speaking) works downwards. This difference, too, is obviously due to the wishes of Dr. Staudinger, or to the fact that the present work is regarded as a new edition of the Staudinger-Wocke *Catalog* rather than as an entirely independent publication (see preface, p. xii). The genera of each family among themselves should also surely follow the same plan—to the limited extent, that is, to which it is possible—and this has evidently been Dr. Rebel's ideal, as he shows in his prefatory remarks concerning the *Sphingidae*, which Dr. Staudinger insisted on retaining in an order almost the reverse of that desired by his colleague. As will have been gathered from the foregoing remarks, the general arrangement of the new catalogue is a series of "families," many of which correspond to "superfamilies" in Mr. Tutt's sense. Higher groupings are disregarded, and the illusive terms "Pombyces," "Tineina," &c., are swept away, never again, let us hope, to appear in any work of credit. The division into "Rhopalocera" and "Heterocera" is also abandoned. Theil I (whilom "Macrolepidoptera") consists of 39 families, in the following order:—*Papilionidae*, *Pieridae*, *Nymphalidae*, *Libytheidae*, *Erycinidae*, *Lycaenidae*, *Hesperiidae*, *Sphingidae*, *Notodontidae*, *Thaumetopoeidae*, *Lymantriidae*, *Lasiocampidae*, *Endromidae*, *Lemoniidae*, *Saturniidae*, *Brahmacidae*, *Bombycidae*, *Drepanidae*, *Callidulidae*, *Thyrididae*, *Noctuidae*, *Agaristidae*, *Cymatophoridae*, *Brephidae*, *Geometridae*, *Uraniidae*, *Epiplemidae* (this is the last family which Staudinger lived to revise), *Nolidae*, *Cymbidae*, *Syntomidae*, *Arctiidae*, *Heterogynidae*, *Zygaenidae*, *Megalopygidae*, *Cochlididae*, *Psychidae*, *Sesiidae*, *Cossidae*, *Hepialidae*: of these, only the *Nymphalidae*, *Noctuidae*, *Geometridae*, *Arctiidae*, and *Zygaenidae* are divided into subfamilies. Theil II consists of 18 families, namely:—*Pyralidae*, *Pterophoridae*, *Tortricidae*, *Glyphipterygidae*, *Yponomeutidae*, *Plutellidae*, *Gelechiidae*, *Tinaegeriidae*, *Elachistidae*, *Gracilariidae*, *Lyonetiidae*, *Nepticulidae*, *Talaeporiidae*, *Tineidae*, *Crinopterygidae*, *Eriocraniidae*, *Micropterygidae*; ten of these are divided into subfamilies. It may be noticed in passing that both Staudinger and Rebel have accepted the classically incorrect terminations *iidae* and *iinae* where necessitated by the root structure; the present writer had already corrected his own copy of the *Nomenclature of Lepidoptera: Correspondence* (Hampson's), on p. 303, "Analysis of Replies," where Staudinger and, apparently, also Kirby and Aurivillius are made to vote *against* "*iidae*, *iinae*," contrary to their expressed opinions—the only shadow of evidence of bias which has been noticed in Mr. Durrant's truly admirable analyses. In Rebel's 1899 article the number of families proposed reached 60, as against the 57 enumerated above; the slight discrepancy is due to the sinking of *Blastobasidae* and *Oecophoridae* as subfamilies of *Gelechiidae*; of *Adelidae* as subfamily of *Tineidae*; and of *Lithosiidae* as subfamily of *Arctiidae*: while on the other side the family

Lygonetiidae is here separated. Another little change which does not affect the total number is the acceptance of the recently-erected family *Lemoniidae* (*Ent. Nachr.*, xxvi., p. 49; *Ent. Rec.*, xiii., pp. 167-8; *Trans. Ent. Soc. Lond.*, 1901, p. 187), and the consequent rejection of *Eupterotidae* (with which the genus *Lemonia*, Hb., had been associated) from the Palearctic fauna. Dr. Rebel (*Ent. Nachr.*, loc. cit., Feb. 1900) forestalled our English entomologists in this change, and will blame our insular ignorance of his work. No doubt our most advanced students of phylogenetic classification will find a good deal to criticise in matters of detail as regards the contents and boundaries of the various families, apart altogether from the less important question of their sequence. Why, for instance, are the Syntomids maintained as a distinct family from *Arctiidae*, while, on the other hand, Fam. xxxviii, *Cossidae*, is allowed to contain such diverse elements as *Cossus* and *Zeuzera* without even subfamily distinction? (In *Iris*, xi., p. 387, two subfamilies, *Cossinae* and *Zeuzerinae*, are recognised, and intimation given that their differences are not unperceived.) But there are few things more difficult than to arrange our material in a series of families of *approximately equal value*, and there is much cause for thankfulness that in the catalogue now before us many of the most absurd combinations are abandoned, and the work is in the hands of an author who is at least thoroughly in sympathy with the modern biological standpoint.

In dealing with the individual families, and, in some cases, individual genera, our authors have made considerable use of the most recent monographic works, and their results are satisfactory or the reverse largely according to the value of the authorities followed. No better method could, however, be desired for a catalogue; even a catalogue of the high position which will be conceded to that of Staudinger and Rebel cannot be expected to undertake first-hand revisional work on any large scale (compare preface, p. ix), although, of course, it was the duty of the authors to check everything so far as possible before accepting it, and evidence is not wanting that this has in nearly all cases been conscientiously done. The amount of literature gone through must have been enormous, and very little of importance published up to the close of the year 1900 seems to have been overlooked. The literature list on pp. xv-xxvi contains 524 entries (sometimes with valuable bibliographical details), as against 360 in the 1871 edition, notwithstanding that a good many pre-Linnean works which were previously quoted are now omitted; nor must it be forgotten that many of the entries are of periodicals which have been running for quarter or half a century (or more), and it is no light work to make oneself conversant with the lepidopterological contents of even one such periodical. Very few of the monographers have been followed without some reservation; perhaps Aurivillius, on the *Lasiocampidae*, is an exception—but in any case he is a recognised specialist on the family. The revisions among the butterflies, such as those of the *Hesperiidae* by Elwes and Edwards, of *Erebia* by the same authors and Dr. Chapman, were of course independently judged by Dr. Staudinger, and in a few details his opinions differ from theirs. The old aversion to the multiplication of genera is still observable; the new genus *Erebomorpha*, Elwes (*Trans. Ent. Soc. Lond.*, 1899, p. 351)—which, by the way, is a preoccupied name, *Erebomorpha*, Wlk., 1860, being a

Geometrid genus*—is not accepted, although it seems to be founded on quite sufficient peculiarities; nor are Scudder's groupings in *Argynnis*, nor (to any adequate extent) in the Blues, followed; on the other hand, the necessary splitting up of *Thecla* into three genera (*Thecla*, *Callophrys*, and *Zephyrus*) has apparently been deemed inevitable, as also has the removal of *hyperantus* from the genus *Epinephle* (into *Aphantopus*, Wlgrn.). Hampson's work, so far as published, has been requisitioned for the Syntomids and Lithosiids, as well as for the *Pyralidae*, and Meyrick's revision has had some influence in the *Geometridae*, &c. Mr. Tutt's *British Lepidoptera*, vol. ii., was no doubt received too late for the close study which it requires, and the treatment of the Psychids is a kind of compromise between the systems of Heylaerts (mentioned as authority in the preface, dated December 31st, 1900) and of Tutt. The latter, based as it is upon the splendid work of Dr. Chapman, may be trusted to win its way in all essentials so soon as it is thoroughly known and digested. Already one is glad to see much of the corrected nomenclature accepted according to Tutt, and some of his most obviously necessary genera—*Luffia*, *Banksia*, &c., duly recognised.

* For *Erchromorpha*, Elwes, *nee* Walker, the name of *Boeberia*, n. nom., should be substituted, in honour of the discoverer of the type species, which is *parmenio*, Boeb.

(To be continued.)

Migration and Dispersal of Insects: Lepidoptera.

By J. W. TUTT, F.E.S.

The tropical and subtropical forests of Central and South America appear to produce several migrating species of lepidoptera. In the openings of these great forests insects abound. Here giant trees throw up their great crowns and form a canopy of foliage that almost shuts out the light, whilst the twining lianas hang rope-like from the branches, entangling the massive trees like cables or covering the dark leafage with their beautiful flowers; epiphytes may be seen in every fork sending down their long aerial roots, and great broad-leaved heliconias, leathery melastomæ and succulent begonias are abundant, whilst the cecropia trees, with white stems and large palmate leaves form huge candelabra, and the ground is sometimes carpeted with large flowers, yellow, pink, or white, that have fallen from some invisible tree-top above, or the air is filled with a delicious perfume, the source of which one seeks around in vain, for the flowers that cause it are far overhead out of sight, lost in the great overshadowing crown of verdure. It is on the outskirts of such forests as these, so exquisitely described by Belt, that insect life is most prolific, and this powerful writer briefly chronicles (*Naturalist in Nicaragua*, p. 152) the migrating habits of certain species. He writes: "As we rode along, great numbers of a brown-tailed butterfly (*Timetes chiron*) were flying to the south-east; they occurred, as it were, in columns. The air would be comparatively clear of them for a few hundred yards, then we would pass through a band, perhaps 50 yards in width, where hundreds were all in sight, and all travelling one way. I took the direction several times with a pocket-compass and it was always south-east. Amongst them were a few yellow butterflies, but these were not as numerous as in former years. In some seasons these migratory